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ABSTRACT

This study focused on the acquisition of the dative verb by Chinese learners of English as a Second Language. The study proposes that the learner acquires basic semantic structure for the double-object dative via the "near universal linking rules that map thematic roles to syntactic positions. On semantic grounds, the learner might then use any verb in the double-object dative that is semantically consistent with the semantic structure for the double-object dative, including verbs such as "deliver," "pull," and "shout." To elicit information on this issue, four grammaticality judgment tests were administered to two groups of Chinese students, and a control group of native speakers in Hong Kong. (Author/JL)

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Constraints on Dative Acquisition by Chinese ESL Learners*

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1. Introduction

In English, while most dative verbs can appear in both the prepositional ([__NP PP]) and the double-object dative ([__NP NP]) structures, some verbs (e.g. *deliver*, *construct*, *pull*, *pick*) allow only the [__NP PP] structure, as in:

(1) a. John gave a book to Mary.
b. John gave Mary a book.
c. John made a cake for Mary.
d. John made Mary a cake.
(2) a. John delivered a letter to Mary.
b. *John delivered Mary a letter.
c. John constructed a house for Mary.
d. *John constructed Mary a house.
e. John pulled a box to Mary.
f. *John pulled Mary a box.
g. John picked a dress for Mary.
h. *John picked Mary a dress.

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The limited productivity of the double-object dative in English presents a learnability problem to the L1 learner. As Baker (1979) observes, given that negative evidence is in general not available to the learner, it would logically be impossible for the learner to restrict the double-object dative to the right set of dative verbs, once heovergeneralizes the structural alternation (generally known as the dative alternation) between pairs of sentences such as (1a-b) or (1c-d), and consequently commits errors such as (2b), (2d), (2f), or (2h).

This problem may arise in L2 acquisition of the English dative also. While L2 acquisition is different from L1 acquisition in many ways (see Bley-Vroman (1989) for a detailed discussion), White (1989) argues that L2 input may be deficient to the extent that it underdetermines the L2 grammar in precisely the same way that L1 input underdetermines the L1 grammar. In the case of dative acquisition, the L2 input, like the L1 input, is deficient because negative evidence (in the form of formal instruction or error correction) on the ungrammaticality of double-object sentences such as (2b), (2d), (2f), or (2h) is generally not available to the learner, and because negative evidence provided in reference grammar books or English textbooks is scanty.[1] As a result, the L2 learner will face the same learnability problem if he ever overgeneralizes the dative alternation. It will therefore also be interesting to know how L2 learners overcome this problem when acquiring the English dative.

Baker (ibid.) proposes that in acquiring the English dative, the learner acquires the complement frame(s) for a given dative verb only if the

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[1] Some reference grammar books (e.g. Swan 1980) and English textbooks intended for non-native speakers (e.g. Rutherford 1975) have pointed out that verbs such as *explain*, *suggest*, *describe*, *explain*, *repeat*, and *prescribe* must be used with a preposition before an indirect object. However, given the existence of many other dative verbs which appear only in the [__NP PP] structure, this limited amount of negative evidence is not sufficient. As for some textbooks used in secondary schools in Hong Kong (e.g. *Integrated English*, or *Trend*), instruction on the English dative consists of no more than a few sentences such as:

a. Give me some advice.
b. He gave Mary some books about swimming.
c. Mary lent her friend one of the books.
d. Can you lend/give me a ruler?

input data contains exemplars of the frame(s). The learner thus faces no learnability problem, as he does not overgeneralize the dative alternation in the first place. However, Mazurkewich and White (1984), Bowerman (1987), and Gropen et al. (1989) show that learners are not as conservative as Baker assumes. They at times extend the double-object dative to non-alternating dative verbs, or to novel verbs modeled only in the [__NP PP] structure. Mazurkewich (1984) shows that the same may also be true of L2 learners of English.

The question one has to answer then is how the learner overcomes the overgeneralization problem in the absence of negative evidence. Mazurkewich and White (1984), Gropen et al. (1989) both hypothesize that the learner is able to restrict the scope of the double-object dative through recourse to a semantic and a morphophonological constraint on the English double-object dative.

The semantic constraint specifies that the indirect object in the double-object structure has to be the `prospective possessor' of the entity denoted by the direct object (Green 1974, Oehrle 1976, Goldsmith 1980, Stowell 1981). This offers an explanation as to why double-object sentences like (1b) or (1d) are well-formed whereas those like (3b) or (3d) are not.

(3) a. John sent a letter to New York.
b. *John sent New York a letter.
c. John opened a window for Mary.
d. *John opened Mary a window.

The indirect object in (1b) and (1d) signifies a goal and a beneficiary respectively (both of which can be interpreted as prospective possessors of the direct object). Whereas, the NP immediately following the verb in (3b) refers to a place, and that in (3d) a deputive (a person in whose stead the person denoted by the subject undertakes an action).

The morphophonological constraint, on the other hand, relates to the native/Latinate distinction in the English vocabulary. Phonologically, most words of native origin are monosyllabic or disyllabic with stress on the first syllable. Morphologically, affixes like -ness, -hood, -ful, -er attach preferentially to native words, whereas affixes such as con-, in-, -ity, -ic attach to Latinate words. In general, only verbs of native origin permit the double-object structure (Oehrle 1976, Stowell 1981, Mazurkewich and White 1984). Since verbs such as *deliver* and *construct* are Latinate in origin, sentences such as (2a) and (2c) do not have corresponding double-object forms.

Mazurkewich and White (1984) propose that in acquiring the English dative, children first formulate a lexical rule in their lexicon relating the two

complement frames of alternating dative verbs on the basis of positive evidence. They then may extend the rule to non-alternating dative verbs. However, they will drop overgeneralization errors when they realize that the indirect object in the double- object structure has to be the prospective possessor of the direct object, and that the rule only relates lexical entries of native verbs.

Gropen et al. (1989), however, suggest that in acquiring the English dative, it is unlikely that learners should first go through a stage in which they apply the dative rule as a purely syntactic operation without imposing constraints on it. Rather, plausibly the use of the double-object dative is constrained from the start. They see the dative alternation in English as inherently an operation that changes the lexicosemantic structure of the prepositional dative X causes Y to go to Z (which is transparent from the surface syntax, given prepositional marking) to that of the double-object dative X causes Z to have Y. This operation is assumed to be easily effected, as it is motivated by the semantics of dative verbs appearing in both dative structures in the input, which signify causation of possession change, and by what Gropen et al. call `near-universal linking rules' that map thematic roles to syntactic positions. Such linking rules specify, among other things, that in the unmarked case a causee or patient argument will be linked to the syntactic object, or that the syntactic object will be linked to a causee or patient.[2] Acquisitionally, since this semantic structure could be available to children from the start through an easily-effected operation, we would expect it to pose a constraint on the use of double-object dative from a very early stage of L1 dative acquisition. It follows naturally from this structure that Z (the indirect object) should be some entity going to possess Y (the direct object), and that Z should be involved by the verb as a causee.

What if then children overgeneralize the double-object construction to dative verbs which pertain to the general event of causation of possession change, but which do not occur in that form in English? Gropen et al. observe that these lexical exceptions fall into two types. Besides Latinate verbs such as *deliver* and *construct*, there are native verbs such as *pull*, *shout*, or *pick*. Since they suggest actions which could involve goal or beneficiary indirect

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2 Such 'linking rules' are near-universal because they do not characterize all human languages. As Bowerman (1990) points out, languages characterized as syntactically ergative link the patient to the subject position and the agent to the object position.

objects as causees less naturally than canonical dative verbs such as *send* or *throw*, they therefore do not occur in the double-object form.

Gropen et al. propose that overgeneralizations involving Latinate verbs can be ruled out through recourse to the morphophonological constraint. They observe that the statistical phenomenon that parents use the native vocabulary and almost no Latinate verbs when talking to their children may lead children to assume that English has a morphophonological constraint on the double-object dative.

Gropen et al. also propose that overgeneralizations involving exceptional native verbs would be few, as children are conservative in that they will assign the [__NP NP] complement frame to dative verbs which they either have heard used in that form, or which are semantically `similar' to them. Verbs like *throw* and *kick* are considered `similar', as both of them pertain to the grammatically-relevant notion of `instantaneous causation of motion', though they differ in the specific idiosyncratic properties of manner. And having seen *throw* being used in the double-object form, children would automatically generalize it to kick. However, such generalization will not extend to verbs like *pull*, which pertain to other grammatically-relevant notions. *Pull*, for instance, signifies `continuous causation of accompanied motion in some manner'.

Randall (1987, 1990) proposes yet another mechanism for the acquisition of the English dative. She notes that verbs which do and do not occur in the double-object structure differ in their basic argument structure. The former (e.g. give, sent, bring, lend, tell, show) standardly take two mandatory objects, as shown in (4), whereas the latter (e.g. deliver, contribute, report, explain, dictate, recite) can take the direct object alone, though optionally, they can also take the indirect object as in (5).[3]

(4) a. *Pablo gave his painting.
Pablo gave his painting to Cressida.
b. *Cressida sent the book.
Cressida sent the book to Romeo.

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[3] It has been pointed out in the literature (Bowerman 1987, Hawkins 1987, Gropen et al. 1989) that Randall's observation is descriptively too strong, since many alternating dative verbs do allow a direct object NP to standardly occur alone (e.g. *sell*, *kick*, *serve*, *write*, *teach*, *buy*, *cook*).

(5) a. Romeo delivered the posies.
Romeo delivered the posies to Joan.
b. Joan explained his painting.
Joan explained his painting to Pablo.

She also notes that English poses a constraint on the order of the constituents within a maximal projection which specifies that obligatory elements be attached closer to the phrasal head than optional elements (Jackendoff 1977, Randall 1987: 9-10). Randall calls this constraint the Order Principle. So, in an English VP, the required order is obligatory-optional, and violation of such an order leads to ungrammaticality, as shown in (6).

(6) a. Pablo invited Doris to the art opening.
Pablo invited (*to the art opening) Doris.
b. Dylan spent a lot of money on drink.
Dylan spent (*on drink) a lot of money.

Randall suggests that when acquiring the English dative, the child would first overgeneralize the dative alternation because they do not realize that for some dative verbs such as *deliver*, the indirect object is optional. However, when he hears these verbs occur with the direct object alone in unmarked contexts, he marks the indirect object as optional. And since the use of an optional indirect object before an obligatory direct object in the double-object construction violates the Order Principle, the learner would stop using these verbs in that construction. Here, though the child has no access to direct negative evidence informing him that some dative verbs cannot be used in the double-object form, the input provides some indirect evidence that serves just this purpose.

The accounts outlined above present interesting perspectives on the resolution of the learnability problem. However, a number of issues have to be subjected to vigorous empirical studies before we can establish the validity of one proposal or another. First, we lack systematic information on whether L1 learners violate the semantic constraint, as previous studies are concerned mainly with whether, but not what kind of, overgeneralizations occur.[4] With

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[4] White (1987) carried out an act-out and an imitation test with 20 children aged 3;8 to 5;8 on sentences involving some for-dative verbs (e.g. *draw, get, tie, drive*), in an attempt to see if overgeneralization errors that violate the semantic constraint occur. The results from the act-out task show that the

regard to L2 dative acquisition, information on this issue is also lacking, though issues like markedness, L1 influence have been explored (Mazurkewich 1984, Le Compagnon 1984, Hawkins 1987). Second, it is yet to be established empirically whether learners are sensitive to the subtle semantic distinction between canonical dative verbs and exceptional native verbs like *pull* or *shout*, which, according to Gropen et al. satisfy the semantic constraint only marginally. Moreover, it is unknown whether semantic 'similarity' would be a sufficient condition to refrain learners from ever extending the double-object dative to native verbs such as *pull* or *shout*. Third, the empirical validity of Randall's proposal is uncertain. We do not know if learners actually utilize knowledge about the argument structure of dative verbs and general principles of English phrase structure in overcoming overgeneralizations in dative acquisition. It is the main objective of the present study to provide experimental evidence for the assessment of these issues.

2. Test design and results

To elicit information for assessing the issues outlined above, four grammaticality judgment tests were administered to two groups of Chinese ESL learners, and a control group of native speakers in Hong Kong in the fall of 1990. The two L2 groups consist of 16 form 4 English-medium secondary school students and 16 4th-year English major students at the Chinese University of Hong Kong, respectively. The native English speakers were 8 exchange students from the United States and Canada. The test sentences in

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children did not consistently act out sentences containing alternating dative verbs (e.g. *draw, get*) by moving the entities denoted by the direct object and the indirect object. Neither did they act out sentences containing verbs such as tie or drive by only manipulating the entity denoted by the direct object. White interpreted those cases in which the children acted out both the direct and the indirect object of the sentences such as **open the doll the box* and **drive the teddy the car* as indications of overgeneralization violating the semantic constraint. However, since it is not always necessary to act out the benefactive or deputive roles involved in double-object sentences containing for-dative verbs, nor are they easy to act out, and since, as White herself observes, 'all the sentences make complete sense without acting out the indirect object' (p.270), act-out tests may not be appropriate for eliciting information about overgeneralization of the for- double-object datives.

each test were randomized, and the four tests were contained in one single package, one test following another. There was no time limit on the tests. However, the subjects were all able to finish the tests within 30 minutes.

2.1. Test 1

This test included the verbs given in table 1. The verbs in A and D are native verbs which may occur in the double-object form. B and E are Latinate verbs which do not occur in double-object datives. The verbs in C and F belong to subclasses of verbs which, according to Gropen et al. potentially signify causation of possession change, but which do not in fact appear in the double-object form, probably because they involve the indirect object as causee in less direct ways. The verbs in C are further divided into two groups: Ca and Cb. The former are verbs of continuous causation of accompanied motion in some manner while the latter are verbs of manner of speaking and communication of propositions and propositional attitudes (cf. Gropen et al. 1989: 244). Cell F contains only two native for-dative verbs which cannot occur in the [__NP NP] form.[5] The four verbs in Cell G normally involve the indirect object only as a deputive, and thus do not occur in the double-object form.

In the judgment test, all the verbs in Table 1 (except for those in A and G) appeared in a pair of sentences, one in the [__NP PP] form, and the other in the [__NP NP] form (see Appendix 1.2.).

The verbs in A appeared in three pairs of sentences as shown in (7). The verbs in G appeared in two pairs of sentences, as shown in (8).

(7) A. a. *send (Mary)* sentences
e.g. John sent a letter to Mary.
John sent Mary a letter.
b. *send (New York)* sentences
e.g. John sent a letter to New York.
*John sent New York a letter.

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[5] There is disagreement among linguists about the grammaticality status of double-object sentences containing the verb choose (e.g. *John chose Mary a dress*). Mazurkewich and White (1984:279), Hawkins (1987:37), and Green (1974:93) consider such sentences as grammatical whereas Gropen et al. (1989:244) don't. In the present study, I follow Gropen el al.'s intuition, treating such sentences as not permissible in English.

c. *send (school)* sentences
e.g. John sent a letter to the school.
?John sent the school a letter.

(8) G. a. *open (window)* sentences
e.g. John opened a window for Mary.
*John opened Mary a window.

b. *open (whisky)* sentences
e.g. John opened a bottle of whisky for Mary.
?John opened Mary a bottle of whisky.

TABLE 1

Verbs Used in Test 1

To-dative	*For-dative*
Alternating**	Alternating
A. send	D.make
ship	find
bring	build
cable	sing
Non-alternating*	Non-alternating
B. deliver	E.construct
transport	design
display	create
report	obtain
C a.pull	F.choose
push	pick
lift	
lower	G.open
b.shout	wash
scream	weigh
say	pack

** Verbs that occur in both the [__NP PP] and [__NP NP] structures;
* Verbs that occur only in the [__NP NP] structure.

The remaining 6 types of sentences contain the verbs in B, C, D, E, and F, respectively. They all have an animate indirect object, and are named after the first verb in each verb category:

(9) B. deliver sentences
e.g. John delivered a letter to Mary.
*John delivered Mary a letter.

Ca. pull sentences
e.g. John pulled a box to Mary.
*John pulled Mary a box.

Cb. shout sentences
e.g. John shouted the news to Mary.
*John shouted Mary the news.

D. make sentences
e.g. John made a cake for Mary.
John made Mary a cake.

E. construct sentences
e.g. John constructed a house for Mary.
*John constructed Mary a house.

F. choose sentences
e.g. John chose a dress for Mary.
*John chose Mary a dress.

All the test sentences are in simple declarative form. The verbs all appeared in the simple past tense. With a few exceptions, all the sentences in the [__NP PP] form contained six words, and [__NP NP] form five words. The subjects were asked to indicate whether a given test sentence was acceptable, unacceptable, or they were uncertain about its acceptability status. Only one response was permitted per test sentence (see Appendix 1.1).

For a particular sentence type, the number of times an individual gave a particular response category (i.e. acceptable, unacceptable, uncertain) to the 4 prepositional or the 4 double-object dative sentences within that sentence type was his score for that response category. The total score of an individual across response categories for the [__NP PP] and the [__NP NP] dative forms within a sentence type should be 4 respectively. The shout sentence type consisted of three test verbs, and the choose sentence type two test verbs, for each dative structure. In order to render the mean scores for these two types of sentences comparable to those for other types of sentences, the mean scores for the shout type were multiplied by 4/3, and those for the choose type by 2.

The figures in Table 2 show the mean acceptance scores of each group for various sentence types in both the prepositional and the double-object structure.

2.1.1. Results

All the three groups of subjects showed a high degree of acceptance of the sentences in the [__NP PP] form, irrespective of whether or not the preposition used was to or for. In general, the mean acceptance score was 3.50 or more for the three groups of subjects.

The native speakers' performance tallied with linguists' analysis of the English double-object dative. The mean scores for the ungrammatical double-object sentences (indicated by asterisks in the table) were generally low, ranging from 0.33 (for the *shout* type) to 1.75 (for the *choose* type). On the other hand, the grammatical double-object sentences received high acceptance scores (3.50 for the *send (Mary)* type, and 3.38 for the *make* type).

In contrast, the secondary subjects showed a generally low acceptance of all the 11 types of sentences in the double-object form, regardless of whether the sentences are grammatical or not in English. The mean acceptance scores for the ungrammatical sentences ranged between 0.75 (for the *open (window)* type) and 2.31 (for the *deliver* type). The difference between the acceptance score for the *send (Mary)* type and that for the *make* type is statistically significant (2.25 vs 1.38; $t=2.33$, $p=0.034$). This confirms the finding in previous studies (Mazurkewich 1984, Hawkins 1987) that L2 learners acquire the to-double-object dative before the for- double-object dative.

Although secondary subjects gave generally low scores of acceptance for double-object datives, they treated the *send (Mary)* and *send (New York)* types differently. The subjects accepted the latter significantly less (2.25 vs 1.13; $t=2.91$, $p=0.011$), reflecting an effect of the semantic constraint.

The learners' sensitivity to the semantic constraint on the double-object dative can also be seen from the results on the *make* and *open (window)* sentences. The mean acceptance score for the former type (1.38) exceeds that for the latter (0.75). The difference approaches significance ($t=1.99$, $p=0.066$).

The secondary subjects also distinguished the canonical *send (Mary)* type from the *pull* type. The difference between the subjects' performance for the two types is significant (2.25 vs 1.38; $t=2.21$, $p=0.04$). As previously noted, verbs like *pull* are not able to occur in the double-object form, probably because their meaning structure involves the indirect object as causee less directly than verbs such as *send*.

TABLE 2

Judgment of Prepositional and Double-Object Datives

Mean Acceptance Score (Maximum=4)

Test Sentence Types						
To-dative	[__NP PP]			[__NP NP]		
	SS	US	NS****	SS	US	NS
A. send (Mary)	3.87	3.75	3.75	2.25	3.19	3.50
send (New York)*	3.81	3.62	4.00	1.13	1.06	1.13
send (school)	3.50	3.63	4.00	1.94	2.31	2.75
B.deliver**	3.75	3.56	3.50	2.31	1.38	0.63
C a.pull***	3.44	2.94	3.38	1.38	1.00	0.63
b.shout***	3.67	3.67	3.67	1.58	0.58	0.33
For-dative						
D.make	3.44	3.87	4.00	1.38	2.81	3.38
E.construct**	3.56	3.75	4.00	1.69	0.88	1.00
F.choose***	3.87	3.75	3.75	1.00	1.13	1.75
G.open (window)*	3.50	3.81	3.88	0.75	0.31	0.50
open (whisky)	3.81	3.75	4.00	1.44	1.38	1.87

**** SS = Secondary subjects, US = University subjects, NS = Native speakers;
*** Sentences containing exceptional native verbs;
** Sentences containing Latinate verbs;
* Sentences containing a `locative' or a `deputive' indirect object.

The effect of the semantic constraint on the subjects' response can be seen more clearly if we compare the results on the *deliver*, *pull*, and *shout* types of sentences, and the results on the *construct* and *choose* types. The mean acceptance score for the *deliver* type was significantly higher than that for the *pull* sentences (2.31 vs 1.38; $t=4.39$, $p=0.001$). The score for the *construct* type was also significantly higher than that for the *choose* type (1.69 vs 1.00; $t=2.30$, $p=0.04$). This distinction cannot be attributed to characteristics of the

input, since presumably the subjects could not have heard any of these test sentences before.

The secondary subjects, however, did not differentiate between the *send (Mary)* and *deliver* types, nor the *make* and *construct* types. Interestingly, the subjects accepted the *deliver* sentences slightly more than the *send (Mary)* sentences (2.31 vs 2.25), and the *construct* sentences more than the *make* sentences (1.69 vs 1.38). This indicates that the native/Latinate morphophonological distinction was irrelevant to the secondary subjects' acceptability judgment of double-object sentences.

Compared with the secondary subjects, the performance of the university students showed the following differences. First, as Table 2 indicates, the university subjects showed a much greater acceptance of grammatical double-object dative sentences, i.e. the *send (Mary)* and *make* types than the secondary subjects. The mean acceptance scores for these two types were significantly higher than the corresponding scores given by the secondary subjects (3.19 vs 2.25, $t=2.37$, $p=0.028$ for the *send (Mary)* type; 2.81 vs 1.38, $t=3.43$, $p=0.002$ for the *make* type). On the other hand, the university subjects showed a lower rate of acceptance of all the ungrammatical double-object sentences (with the exception of the *choose* type).[6] The inter-group difference between the scores for the *deliver* and the *shout* type reached statistical significance (2.31 vs 1.38, $t=2.11$, $p=0.04$ for the *deliver* type; 1.58 vs 0.58, $t=2.46$, $p=0.02$ for the *shout* type). The high acceptance level of the grammatical double-object datives by the university students suggests that there may be a major effect of positive evidence on the acquisition of the English dative, as these are the only dative types which the subjects could have encountered in the input data.

Second, the difference between the two scores given by the university subjects for the grammatical to-double-object sentences (i.e. the *send (Mary)*

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6 As observed in Note 5, there is disagreement among native speakers of English about the grammaticality status of double-object sentences containing the verb *choose*. Plausibly, positive evidence for such sentences had been available to the university subjects. This might be the reason why the university subjects found sentences of the *choose* type (which were considered as ungrammatical in the present study) slightly more acceptable than the secondary subjects (1.13 vs 1.00). Note that the native subjects found such sentences even more acceptable than the university subjects (1.75 vs 1.13).

type) and the grammatical for-double-object sentences (i.e. the *make* type) narrowed, the scores being 3.19 and 2.81 respectively.

Third, the university subjects significantly differentiated sentences containing native verbs from those containing Latinate verbs. The mean scores for the *send (Mary)* and *make* types of sentences were significantly higher than those for the *deliver* and *construct* types (3.19 vs 1.38, t=7.39, p=0.00; 2.81 vs 0.88, t=7.77, p=0.00).

2.2. Test 2

In order to further test the learners' sensitivity to the semantic constraint on the English double-object form, a second test was used which involved the send (school) and open (whisky) types of sentences. These sentences were different from the send (New York) and open (window) sentences, as they might, or might not, signify transfer of possession, depending on how they are seen pragmatically. For each pair of such sentences, one in the [__NP PP] form, the other in the [__NP NP] form, two situations were created (see Appendix 2.2). In one situation, the indirect object is more likely to receive a 'prospective possessor' or `beneficiary' interpretation, as in:

(10) A. John wanted to thank all the teachers at a school for their help. So,
___John sent a letter to the school.
___John sent the school a letter.
B. John wanted to drink whisky. So,
___Mary opened a bottle of whisky for John.
___Mary opened John a bottle of whisky.

In the other situation, the indirect object was likely to receive a 'location' or 'deputive' reading as in:

(11) A. John wanted to tell a friend studying at a school some news. So,
___he sent a letter to the school.
___he sent the school a letter.
B. Mary was too busy to serve a customer who wanted whisky. John would like to help Mary. So,
___he opened a bottle of whisky for Mary.
___he opened Mary a bottle of whisky.

The learners are asked to indicate whether a particular test sentence in a specified situation was acceptable, unacceptable (see Appendix 2.1.). It was

hypothesized that the learners would treat the same double-object sentence differently under the two different situations, accepting the sentence under the first situation, and rejecting the same sentence under the second.

2.2.1. Results

The results of this test are presented in Table 3. As can be seen from the table, the difference in situation had little bearing on the subjects' judgment of the sentences in the prepositional dative form, all of which received a high acceptance score. The lowest score was 3.13 for the secondary subjects; 3.31 for the university subjects; and 3.88 for the native speakers.

The contextual difference, however, affected the subjects' judgment of the sentences in the double-object form. All the sentences received a lower score when appearing in the situation involving violation of the semantic constraint (Situation 2) than when they appeared in the situation which accorded with the constraint (situation 1). For secondary subjects, the mean score for situation 2 was 0.88, but around 1.30 for situation 1. The university subjects scored approximately 0.50 in situation 2, but the figure was at least 1.06 in situation 1. Likewise, the native speakers had mean scores of 0.25 and 1.00 for situation 2, but corresponding scores of 1.13 and 2.25 for situation 1.

These results lend support to our finding in Test 1 that the subjects were sensitive to the semantic constraint on the double-object construction in English.

2.3. Test 3 and Test 4

These two tests were intended to determine whether or not the acquisition of the Order Principle together with an awareness that the verbs in B, C, E, and F in Table 1 can take the direct object alone would inform the learner that these verbs are disallowed in the double-object dative.

Information about how well the learners had acquired the Order Principle was elicited by Test 3, which consists of 30 sentences (see Appendix 3.2.). Half of them were ill-formed due to violation of the Order Principle. In each of these sentences, an obligatory complement was attached farther away from its head than an optional element, as in:

(12) a. John treated Mary (*last night) badly.
b. John received Mary's reply (*yesterday) to his letter.
c. John is fond (*in some ways) of Mary.

The other half of the test sentences were well-formed sentences, with the elements in each sentence in the right order. On the basis of Test 3, 14 subjects (11 university subjects, 3 secondary subjects) were selected from the two L2 groups. Each of these subjects rejected 12 or more of the 15 ill-formed sentences, and accepted 12 or more of the 15 well- formed sentences, and were thus considered as having a good mastery of the Order Principle.

TABLE 3

Subjects' Judgment of Prepositional and Double-object Datives in Biased Contexts

Mean Acceptance Score (Maximum=4)

Test Sentence Type	Secondary Students	University Students	Native Speakers
[__NP PP]			
Situation 1**			
send (school)	3.44	3.31	4.00
open (whisky)	3.44	3.69	3.88
Situation 2*			
send (school)	3.25	3.69	4.00
open (whisky)	3.13	3.50	4.00
[__NP NP]			
Situation 1			
send (school)	1.31	1.63	2.25
open (whisky)	1.25	1.06	1.13
Situation 2			
send (school)	0.88	0.50	1.00
open (whisky)	0.88	0.44	0.25

** Situation 1 favoured a "prospective possessor" reading for send (school) sentences, and a "beneficiary" reading for open (whisky) sentences; * Situation 2 favoured a "locative" reading for send (school) sentences, and a "deputive" reading for open (whisky) sentences.

Test 4 was introduced to see whether or not the learners accepted sentences in which the verbs in B, C, E, and F in Table 1 took only the direct object (see Appendix 4.2.). Half of the test sentences were taken from Test 1,

with the prepositional phrase dropped. So, for example, a sentence like *John delivered a letter to Mary* in Test 1 became *John delivered a letter* in this test.

Table 4

Relations between Subjects' Judgment of Single-argument Forms and Corresponding Double-object Forms (N = 14)

	I**	II	III	IV
	+ [__NP]*	- [__NP]	+ [__NP]	- [__NP]
	- [__NP NP]	- [__NP NP]	+ [__NP NP]	+ [__NP NP]
Test Verb				
B. deliver	4	2	4	2
transport	2	10	0	0
display	3	4	5	0
report	8	3	0	0
C a. pull	6	4	3	0
push	10	1	3	0
lift	11	1	2	0
lower	10	1	1	0
b. shout	5	4	2	1
scream	6	5	1	1
say	11	0	3	0
E. construct	10	1	2	0
design	10	0	3	0
create	8	0	3	1
obtain	9	4	0	0
F. choose	8	0	4	0
pick	3	6	2	1

** The figures in each column indicate the number of subjects that gave a particular response in judging single-argument and double-object sentences containing the verbs listed in the left-most column.

* + = Acceptance, - = Non-acceptance

The judgment made by the 14 subjects considered as having a good mastery of the Order Principle in this test was compared with their judgment in Test 1. If these subjects accepted a sentence like *John delivered a letter*, they were assumed to regard the indirect object of that verb as optional and were

expected not to accept a double-object sentence like *John delivered Mary a letter.*

2.3.1. Results

The results of the comparison of the 14 subjects' judgment in Test 4 and Test 1 are presented in Table 4. As can be seen from the figures in column I, with regard to the verbs *deliver, transport, display, pull, shout, scream,* and *pick,* less than 50% of the subjects rejected the ungrammatical double-object sentences, though the subjects regarded these verbs as single-argument verbs.

As column II shows, on the other hand, 25% or more of the subjects (ranged from 4 to 10 for the most part) rejected the double-object datives, despite the fact that they did not accept these verbs as single-argument verbs.

In addition, as can be seen from column III, for verbs such as *deliver, display, pull, push, say, design, create,* and *choose,* at least 20% of the subjects (3 or more) accepted the double-object datives, while at the same time showing knowledge of the single-argument status of these verbs.

The results show, however, that in general subjects did not accept double-object datives if the verbs were not judged to have single arguments.

Judging from these results, there is not much evidence that subjects' rejection of ungrammatical double-object datives was related in any significant way to the acquisition of the Order Principle, and to an awareness that the verbs in those double-object datives have a single-argument status.

3. Conclusion

3.1. The semantic constraint on the English dative

The results from Test 1 and Test 2 seem to confirm Gropen et al.'s proposal that the double-object dative is inherently constrained semantically as a consequence of having the semantic structure X causes Z to have Y. This structure requires that Z should be a possessor of the direct object, but not merely a place to which the direct object moves, nor a person in whose stead someone does something. It also requires that the indirect object should be a causee, and the more directly the indirect object is involved as causee, the greater the chance for the verb to occur in the double-object dative. This explains why the secondary subjects in the present study should have exhibited a sensitivity to the semantic properties of the indirect object and the dative verbs (in judging the *send (Mary)* and *make* types of sentences as opposed to the *send (New York)* and *open (window)* types, and in judging the *send (Mary), deliver,*

and *construct* types of sentences as opposed to the *pull*, *shout*, and *choose* types), and why they extend the double-object dative to non- alternating dative verbs such as deliver or construct more readily than to *pull*, *shout*, or *choose*.

The fact that the secondary subjects judged the grammaticality of to-double-object datives relatively more accurately than for-double-object datives could also be accounted for in light of Gropen et el.'s account. Since to- dative verbs inherently signify causation of possession change, and either explicitly or implicitly require a possessor goal to which the transfer of possession is directed, grammatical to-double-object datives are compatible with the semantic structure of the double-object dative X causes Z to have Y. On the other hand, this semantic structure is extrinsically imposed on for-double-object datives such as John made Mary a cake. The verb make itself does not signify causation of possession change, and it strictly subcategorizes for only the direct object. Probably, it is because of this difference between the to- and the for- double-object datives that the secondary subjects judged the former as relatively more acceptable than the latter.

Randall's proposal, on the other hand, would have problems in explaining why the secondary subjects preferred verbs such as *deliver* or *construct* to *pull*, *shout*, or *choose* when overextending the double-object construction. It is unlikely that the input data available to these learners happened to have been such that they had learned about the two-place status of verbs such as *pull*, *shout*, or *choose* earlier than verbs such as *deliver* or *construct*.

3.2. Overgeneralization and the learnability problem

The results from Test 1 show that in judging the *send (Mary)* and *deliver* types of sentences, the secondary subjects did not differentiate between the two. The same was true of the *make* and *construct* types. Interestingly, the subjects accepted the *deliver* and *construct* sentences even slightly more than the *send (Mary)* and the *make* sentences, respectively. This clearly suggests that these subjects overgeneralized the double-object dative to dative verbs which occur only in the prepositional form.

As previously observed, overgeneralization in dative acquisition poses a learnability problem, given the assumption that negative evidence is in general not available to the learner. The results of Test 1 show that the scores given by the university subjects for all the types of ungrammatical double-object sentences (except for the choose type) were lower than the corresponding figures given by the secondary subjects. The inter-group difference between the acceptance scores for the *deliver* and *shout* types of sentences was statistically

significant. It remains to be explained why the university subjects rejected these types of sentences significantly more than the secondary subjects, assuming that they had received little or no negative evidence about the ungrammaticality of such sentences.

Recall that double-object datives containing *deliver* and *construct* types of verbs are ungrammatical because the morphophonological constraint restricts the double-object form to verbs of native origin (as opposed to verbs of Latinate origin). It is plausible that the university subjects rejected the *deliver* and *construct* sentences significantly more than the secondary subjects because, on the basis of the input data, they had developed a sensitivity to the native/Latinate distinction in the English vocabulary, and had realized that such a distinction had a bearing on the (un-)grammaticality of double-object datives. However, such an account would become more convincing if we could establish that there is some sort of correlation between the development of an awareness of the native/Latinate morphophonological distinction in the language and the rejection of double-object datives containing Latinate verbs such as *deliver* or *construct*.

The semantic and morphophonological criteria do not explain, however, why the university subjects also rejected ungrammatical double-object sentences containing exceptional native verbs such as *pull* and *shout* more than the secondary subjects. The morphophonological constraint is not relevant here, and these verbs pertain to the general event of causation of transfer (though unlike canonical dative verbs such as *give* or *send*, they may involve the indirect object as causee less directly). It is not clear whether the university subjects had a stricter requirement on the directness of the dative verb's involvement of the indirect object as causee than the secondary subjects, or other acquisitional factors are at work.

The results from Test 3 and Test 4 do not show that good mastery of the Order Principle and recognition of the two- place status of non-alternating dative verbs relate in any significant way to the learners' (non-)acceptance of ungrammatical double-object sentences containing non- alternating dative verbs.

A potential solution to the above problem could perhaps be found in the Uniqueness Principle proposed by Wexler (see Roeper 1981), which requires that in the unmarked case every deep form has a single surface structure in syntax, unless there is positive evidence to the contrary. Roeper (ibid.) transposes this principle to the lexicon, arguing that in the unmarked case each functional structure for a verb has a single subcategorization structure, and that if there is more than one subcategorization for a function, it is marked and written on a separate line of subcategorization.

4.2. Test sentences for Test 4

Non-alternating Verb + Single NP

1. John delivered a letter.
2. John displayed a picture.
3. John transported a car.
4. John reported an accident.
5. John constructed a house.
6. John designed a dress.
7. John created a magic box.
8. John obtained a ticket.
9. John pulled a box.
10. John pushed a table.
11. John lifted a suitcase.
12. John lowered a bucket.
13. ?John shouted the news.
14. ?John screamed the news.
15. John said something.
16. John chose a dress.
17. John picked a cake.

Alternating Verb + Single NP

1. ?John sent a letter.
2. ?John shipped a car.
3. ?John brought a dog.
4. ?John cabled a message.
5. John made a cake.
6. John found a house.
7. John built a house.
8. John sang a song.
9. ?John gave a book.
10. ?John told a story.
11. ?John showed a picture.
12. *John handed a cup to tea.
13. *John lent a bike.
14. ?John passed a ball.
15. John taught English.
16. John kicked a ball.
17. John wrote a letter.

Appendix 3

3.1. Instructions for Test 3

English has certain requirements on the order in which sentence elements may appear in a sentence. For example, a sentence like:

(1) John is a science full time student at the Chinese University.

is ungrammatical. Its grammatical form should be:

(2) John is a full time science student at the Chinese University.

Now, please read the following sentences. Put a ✓ next to any sentence if you think the order of the sentence elements in that sentence is acceptable to you, and put a X next to any sentence if you think the order is not acceptable to you, and put a ? next to any sentence if you are not sure whether the order is acceptable or not. Your first decision is important to us. Please do not change any of your answers. Thank you for your cooperation.

3.2. Test sentences for Test 3

Violation of the Order Principle

Verb + Complement

1. John treated Mary (*last night) badly.
2. John will put the books (*himself) on the table.
3. John invited (*to the party) Mary.
4. John hit (*with a hammer) the nail.
5. John laughed (*at the meeting) at Mary.

Noun + Complement

1. John received Mary's reply (*yesterday) to his letter.
2. There was an attack (*at the meeting) on the Prime Minister.
3. John is a student (*from Hong Kong) of chemistry.
4. The loss (*two years ago) of a ship in a storm cost the company a lot of money.
5. John was wounded in his fight (*after the match) with Bill.

Adjective + Complement

1. John is fond (*in some ways) of Mary.
2. John was dependent (*for many years) on Mary.
3. John is good (*in exams) at cheating.
4. John is proud (*completely) of himself.
5. John is interested (*without any good reasons) in cooking Indian food.

Normal Sentences

1. It rained heavily last night.
2. John attacked Bill by mistake.
3. John spent a lot of money on drink.
4. John wrote a letter to a Cambridge physics professor.
5. John would like to hear something interesting.
6. John got very angry with Bill at the meeting.
7. John is tired of tennis completely.
8. John would not be ready for the game for sometime.
9. John never saw so beautiful a picture.
10. John will put the books on the table himself.
11. John invited Mary to the party.
12. John is a student of chemistry from Hong Kong.
13. The loss of a ship in a storm two years ago cost the company a lot of money.
14. John is interested in Indian food without any good reasons.
15. John is good at cheating in exams.

Appendix 4

4.1. Instructions for Test 4

In English, there are sentences which can take only one sentence element after the verb, as in:

(1) John broke a window.

However, there are also sentences which must take two or more than two sentence elements. For example, a sentence like the following:

(2)*John put a book.

is ungrammatical, as it must take an element after a book which indicates a location. If we add such an element to (2), we get a grammatical sentence:

(3) John put a book on the table.

All the following sentences take only one sentence element after the verb. Please read these sentences. Put a ✓ next to any sentence if you think it is acceptable to you, and put a X next to any sentence if you think it is not acceptable to you, and put a ? next to any sentence if you are not sure whether it is acceptable or not. Your first decision is important to us. Please do not change any of your answers. Thank you for your cooperation.

weigh
John weighed some bananas for Mary.
?John weighed Mary some bananas.
pack
John packed a cake for Mary.
?John packed Mary a cake.

Appendix 2

2.1. Instructions for Test 2

Please complete each of the following sentences. If you think both of the choices given under each of the following sentences can be used to complete the sentence, put a ✓ next to each of the two choices; if you think only one of the two choices can be used, put a ✓ next to the one which think can be used; if you think neither of the choices can be used, put a X next to each of the two choices. Your first decision is important to us. Please do not change any of your answers. Thank you for your cooperation.

2.2. Test sentences for Test 2

To-dative

1. John wanted to tell a friend studying at a school some news. So,
___John sent a letter to the school.
___John sent the school a letter.
2. John wanted to thank all the teachers at a school for their help. So,
___John sent a letter to the school.
___John sent the school a letter.
3. John wanted to give a gift to a friend working in a company abroad. So,
___John shipped a car to the company.
___John shipped the company a car.
4. John would like to give a gift to a company abroad. So,
___John shipped a car to the company.
___John shipped the company a car.
5. John wanted to take a walk with a dog on a farm. So,
___John brought a dog to the farm.
___John brought the farm a dog.

6. John's friend, Peter, once wanted to have a watch-dog on his farm. So,
___John brought a dog to the farm.
___John brought the farm a dog.
7. John wanted to let a friend working at a TV station know something. So,
___John cabled a message to the TV station.
___John cabled the TV station a message.
8. John discovered something important which he wanted everyone in the city to know. So,
___John cabled a message to the TV station.
___John cabled the TV station a message.

For-dative

1. Mary was too busy to serve a customer who wanted whisky. John would like to give Mary some help. So,
___John opened a bottle of whisky for Mary.
___John opened Mary a bottle of whisky.
2. John wanted to drink whisky. So,
___Mary opened a bottle of whisky for John.
___Mary opened John a bottle of whisky.
3. Mary had to many apples to wash. John wanted to help her. So,
___John washed some apples for Mary.
___John washed Mary some apples.
4. Mary need some clean apples to give to her children. So,
___John washed some apples for Mary.
___John washed Mary some apples.
5. Mary had a lot of bananas to weigh. John wanted to help Mary. So,
___John weighed some bananas for Mary.
___John weighed Mary some bananas.
6. Mary came to John's store. She liked the bananas there. So,
___John weighed some bananas for Mary.
___John weighed Mary some bananas.
7. Mary did not have the time to pack a cake for her customer. John came to help. So,
___John packed a cake for Mary.
___John packed Mary a cake.
8. Mary came to John to buy a cake. So,
___John packed a cake for Mary.
___John packed Mary a cake.

report
John reported an accident to the police.
*John reported the police an accident.

Ca. *pull* sentences

pull
John pulled a box to Mary.
*John pulled Mary a box.

push
John pushed a table to Mary.
*John pushed Mary a table.

lift
John lifted a suitcase to Mary.
*John lifted Mary a suitcase.

lower
John lowered a bucket to Mary.
*John lowered Mary a bucket.

Cb. *shout* sentences

shout
John shouted the news to Mary.
*John shouted Mary the news.

scream
John screamed the news to Mary.
*John screamed Mary the news.

say
John said something to Mary.
*John said Mary something.

D. *make* sentences

make
John made a cake for Mary.
John made Mary a cake.

find
John found a room for Mary.
John found Mary a room.

build
John built a house for Mary.
John built Mary a house.

sing
John sang a song for Mary.
John sang Mary a song.

E. *construct* sentences

construct
John constructed a house for Mary.
*John constructed Mary a house.

design
John designed a dress for Mary.
*John designed Mary a dress.

create
John created a magic box for Mary.
*John created Mary a magic box.

obtain
John obtained a ticket for Mary.
*John obtained Mary a ticket.

F. *choose* sentences

choose
John chose a dress for Mary.
*John chose Mary a dress.

pick
John picked a cake for Mary.
*John picked Mary a cake.

G. a. *open (window)* sentences

open
John opened a window for Mary.
*John opened Mary a window.

wash
John washed a shirt for Mary.
*John washed Mary a shirt.

weigh
The nurse weighed a baby for the doctor.
*The nurse weighed the doctor a baby.

pack
John packed a suitcase for Mary.
*John packed Mary a suitcase.

b. open (whisky) sentences

open
John opened a bottle of whisky for Mary.
?John opened Mary a bottle of whisky.

wash
John washed some apples for Mary.
?John washed Mary some apples.

Appendix 1

1.1. Instructions for Test 1

In English, there are verbs which take two objects (a direct object and an indirect object), as in:

(1) John gave a book to Mary.
(direct object) (indirect object)

In some cases the preposition before the indirect object may be *for*, as in:

(2) John painted a picture for Mary.

The direct and indirect object in the above sentences may appear in another order:

(3) John gave Mary a book.
(4) John painted Mary a picture.

Here, the indirect object precedes the direct object, and there is not any preposition before the indirect object.

English also has some verbs which take two objects, but which allow them to appear only in the order shown by sentences (1) and (2), as in:

(5) a. John described the film to Mary.
b. *John described Mary the film.

Sentence (5a) is grammatical, but (5b) is ungrammatical.

Now please read the following sentences. Put a ✓ next to any sentence if you think the two objects in that sentence appear in an order acceptable to you, and put a X nest to any sentence if you think the order of the two objects is not acceptable to you, and put a ? next to any sentence if you are not sure whether the order is acceptable or not. Your first decision is important to us. Please do not change any of your answers. Thank you for your cooperation.

1.2. Test sentences for Test 1

A. a. *send (Mary)* sentences

send
John sent a letter to Mary.
John sent Mary a letter.

ship
John shipped a car to Mary.
John shipped Mary a car.

bring
John brought a gift to Mary.
John brought Mary a gift.

cable
John cabled a message to Mary.
John cabled Mary a message.

b. *send (New York)* sentences

send
John sent a letter to New York.
*John sent New York a letter.

ship
John shipped a car to New York.
*John shipped New York a car.

bring
John brought a gift to the classroom.
*John brought the classroom a gift.

cable
John cabled a message to New York.
*John cabled New York a message.

c. *send (school)* sentences

send
John sent a letter to the school.
?John sent the school a letter.

ship
John shipped a car to the company.
?John shipped the company a car.

bring
John brought a dog to the farm.
?John brought the farm a dog.

cable
John cabled a message to the TV station.
?John cabled the TV station a message.

B. *deliver* sentences

deliver
John delivered a letter to Mary.
*John delivered Mary a letter.

transport
John transported a car to Mary.
*John transported Mary a car.

display
John displayed a picture to Mary.
*John displayed Mary a picture.

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Tentatively, I propose that after encountering a number of dative verbs such as *give* or *send* occurring in both prepositional and the double-object structure in the input data, the learner acquires the semantic structure for the double-object dative via the 'near-universal linking rules' that map thematic roles to syntactic positions (as has been proposed by Gropen et al.). On semantic grounds, the learner might then use, to a greater or lesser degree, any verb in the double-object dative which is semantically consistent with the semantic structure for the double-object dative, including verbs such as *deliver, pull,* or *shout*. At this stage, semantic factors override the requirement of the Uniqueness Principle. As a result, overgeneralizations of the double-object dative occur. However, as the learner observes the function of causation of possession change for these verbs persistently expressed by the prepositional dative in the input data, the learner would gradually drop the corresponding ungrammatical double-object form, in accordance with the Uniqueness Principle. In the present study, the generally greater rejection of ungrammatical double-object datives by the university subjects may reflect an operation of the Uniqueness Principle.

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